

Appl. No. 09/672,007
Amdt. Dated January 25, 2005
Reply to Office action of October 29, 2004
Attorney Docket No. P12030-US1
EUS/J/P/05-1029

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of controlling a radio link (RL) in a mobile radio network (PLMN) for maintaining a high data transmission rate, wherein the mobile radio network (PLMN) includes at least one cell (C1) that has a number of radio channels accessible for radio connection to a corresponding number of mobile stations (MS) within the cell, said method comprising the steps of:

-channel coding (S1) a stream of user data to which redundant information is added, in accordance with a first channel coding scheme;

-transmitting (S2) said stream on a first frequency hopping radio channel (FH_RCH);

-measuring (S3) ~~[[the]]~~ a transmission quality on the first frequency hopping radio channel (FH_RCH); and, if ~~said~~ a measurement of the transmission quality exceeds a predetermined threshold:

-switching (S6) from the first channel coding scheme to a second channel coding scheme that does not add redundant information to said stream of user data, wherein said first channel coding scheme corresponds to CS1, CS2 or CS3 according to GPRS, and wherein said second channel coding scheme corresponds to CS4 according to GPRS; and

-switching (S5) radio channels for sending said stream from the first frequency hopping radio channel (FH_RCH) to a second non frequency hopping radio channel (NH_RCH) in conjunction with ~~said change of the step of switching from the first channel coding scheme to the second~~ channel coding scheme.

2. (Currently Amended) ~~[[A]]~~ The method according to Claim 1, wherein said change of coding scheme takes place in response to a comparison that shows that said measurement ~~result~~ fulfils a pre-set criterion that qualifies said change of channel coding scheme.

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3. (Currently Amended) ~~[[A]]~~ The method according to Claim 1, wherein transmission on said first frequency hopping radio channel or said second non frequency hopping radio channel takes place within said cell (C1) even when the mobile radio network includes several cells.

4. (Currently Amended) ~~[[A]]~~ The method according to Claim 3, wherein prior to carrying out the steps according to Claim 1 said number of radio channels are divided into a group of frequency hopping radio channels (FH_RCH) and a group of non frequency hopping radio channels (NH_RCH).

5. (Currently Amended) ~~[[A]]~~ The method according to Claim 4, wherein carrier waves (fc, fc1-fc3) for said number of radio channels are divided into two groups, of which one a first group has solely said frequency hopping radio channels (FH_RCH) and ~~the other~~ a second group has solely said non frequency hopping radio channels (NH_RCH).

6. (Canceled)

7. (Currently Amended) ~~[[A]]~~ The method according to Claim 1, wherein said radio link (RL) includes an uplink and a downlink which are controlled separately in accordance with the method steps.

8. (Currently Amended) ~~[[A]]~~ The method according to Claim 7, wherein said ~~measurement is effected~~ step of measuring is performed in the downlink in said a mobile station (MS), and the measurement ~~result~~ is sent in the uplink on PACCH for evaluation.

9. (Currently Amended) ~~[[A]]~~ The method according to Claim 7, wherein a switch is made from said first frequency hopping radio channel to said second non frequency hopping radio channel for both the uplink and the downlink when said switch

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is made from said first channel coding scheme to said second channel coding scheme on at least either the uplink or the downlink.

10. (Currently Amended) [[A]] The method according to Claim 1 comprising the further steps of:

- measuring (S7) the transmission quality on said second non frequency hopping radio channel (NH_RCH);

- switching (S10) from said second channel coding scheme to said first channel coding scheme when the transmission quality measured on the second non frequency hopping radio channel fulfils a given criterion; and

- switching (S9) from said second non frequency hopping radio channel to said first frequency hopping radio channel (FH_RCH) for transmission.

11. (Currently Amended) A radio base system (BSS) adapted to control at least one radio link (RL) in a given cell for connection to a mobile station (MS) within said cell, wherein a number of radio channels are allocated to said cell and divided into frequency hopping and non frequency hopping channels, said system comprising

- means for measuring transmission quality on said radio link (RL); and

- means for changing a coding scheme for user data sent on said radio link (RL) in accordance with the measured transmission quality, wherein said system is ~~characterised~~ characterized by

- means that when changing a coding scheme from coded to uncoded transmission of user data functions to also change a radio channel for said radio link (RL) from a frequency hopping radio channel to a non frequency hopping radio channel (FH_RCH, NH_RCH).

12. (Currently Amended) [[A]] The base station controller that comprises a switch connection, and a base transceiver station connection (BTS) ~~characterised~~ characterized by means for carrying out the method according to Claim 1.

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13. (Currently Amended) A method of controlling a radio link (RL) in a mobile radio network (PLMN) for maintaining a high data transmission rate, comprising the steps of:

- channel coding a stream of user data to which redundant information is added in accordance with a first channel coding scheme;

- radio transmitting said stream, wherein ~~[[the]]~~ a transmitter antenna for said ~~radio transmission transmitting said stream~~ alternates between two antennas that are separated spatially or with respect to ~~polarisation~~ polarization so as to obtain antenna diversity;

- measuring (S3) ~~[[the]]~~ a transmission quality of the radio transmission; and if said transmission quality exceeds a predetermined threshold:

- switching (S6) from the first coding scheme to a second coding scheme that does not include ~~the addition of~~ added redundant information ~~to said~~ in the stream of user data; and

- effecting radio transmission without switching the ~~transmission~~ transmitter antenna.

14. (Currently Amended) ~~[[A]]~~ The method according to Claim 13, wherein ~~the transmitter antenna alternates between the two spatially separated antennas switching is effected for each time slot (TS).~~

15. (Currently Amended) A method of controlling a radio link to enable a high user data rate to be transmitted on the radio link, in a mobile communication system supporting GPRS and having four alternate channel coding schemes, ~~the wherein a first three of said four coding schemes adding~~ add redundant information when applied to a stream of user data, and a fourth of said four coding schemes ~~adding~~ adds no redundant information when applied to a stream of user data, said method comprising the steps of:

- channel coding a first stream of user data, according to any of said first three coding schemes, to produce a first coded user data stream;

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- transmitting said first coded user data stream on a first frequency hopping radio channel in a first cell;
- measuring ~~[[the]]~~ a transmission quality on said first frequency hopping radio channel;
- changing the coding scheme for coding said first user data stream from any of said first three coding schemes to said fourth coding scheme, to produce an uncoded user data stream, due to the transmission quality reaching a first threshold value; and
- ~~- changing the radio channel for the transmission of said~~ transmitting the uncoded user data stream, ~~from said first radio channel to~~ on a second, non frequency hopping, radio channel, within the first cell.

16. (Currently Amended) ~~[[A]]~~ The method according to Claim 15 further comprising the steps of:

- measuring the transmission quality on said second, non frequency hopping, radio channel;
- starting channel coding of said stream of user data, due to the transmission quality on said second radio channel reaching a second threshold value; and
- ~~- changing radio channel for said transmission from said second radio channel to~~ transmitting the coded user data stream on a third frequency hopping radio channel, ~~in connection to said starting channel coding.~~

17. (Currently Amended) A radio base system arranged to control a radio link to a mobile station in a certain cell, wherein a number of radio channels are allocated to the cell and the number of radio channels are divided into a group of frequency hopping channels and a group of non frequency hopping radio channels, said radio base system comprising:

- a receiver for measuring ~~[[the]]~~ a transmission quality on said radio link;
- a processor for selecting a coding scheme in relation to the measured transmission quality, wherein said coding scheme is selected from three channel coding

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schemes which add redundant information to the transmitted data or a fourth coding scheme that does not add redundant information to said transmitted data;

a processor for channel coding a stream of user data sent on the radio link according to a selected coding scheme; and

means for changing the radio channel for the radio link from a first frequency hopping radio channel to a second non frequency hopping radio channel when a change of channel coding is made from any of said first three channel coding schemes to said fourth coding scheme .

18. (Canceled)

19. (Currently Amended) A method of controlling a radio link in a mobile radio network for maintaining a high data transmission rate, wherein the mobile radio network includes at least one cell that has a number of radio channels accessible for radio connection to a corresponding number of mobile stations within the cell, said method comprising the steps of:

channel coding a stream of user data to which redundant information is added, in accordance with a first channel coding scheme;

transmitting said stream on a first frequency hopping radio channel;

measuring ~~[[the]]~~ a transmission quality on the first frequency hopping radio channel; and, if said transmission quality exceeds a predetermined threshold:

switching from the first channel coding scheme to a second channel coding scheme that does not add redundant information to said stream of user data; and

switching radio channels for sending said stream from the first frequency hopping radio channel to a second non frequency hopping radio channel in conjunction with ~~said change of the step of switching from the first channel coding scheme to the second~~ channel coding scheme.
